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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,556	10/16/2006	Nam-Seok Roh	8071-79 (OOP 050436 US)	7459

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EXAMINER	
LAWSON, MATTHEW P	
ART UNIT	PAPER NUMBER
2871	
MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/527,556	ROH ET AL.	
	Examiner	Art Unit	
	Matthew P. Lawson	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *13 July 2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed 27 June 2007 has been received and entered.

Claims 1-11 pending in this application.

Information Disclosure Statement

2. An information disclosure statement (IDS) was submitted on 13 July 2007. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement has been considered by the examiner.

Response to Arguments

3. Applicant's arguments with respect to claims have been considered but are moot in view of the new grounds of rejection.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims 1-3, 5 and 7** are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Roh, Korean Patent Application Publication No. 10-2003-0086157A.

6. Regarding claim 1, Roh discloses a thin film transistor array panel comprising:

a. an insulating substrate (100);

b. a plurality of gate lines (121) carrying scanning signals, formed on the insulating substrate, and proceeding in a transverse direction;

c. a plurality of data lines (171) carrying image signals, proceeding in a longitudinal direction to intersect the gate lines, and insulated from the gate lines;

d. a plurality of pixel electrodes (190) formed in respective pixels defined by intersections of the gate lines and the data lines and receiving the image signals; and

e. a plurality of thin film transistors formed in the pixels and having gate electrodes (123) connected to the gate lines, source electrodes (173) connected to the data lines, and drain electrodes (175) connected to the pixel electrodes, wherein a ratio of horizontal to vertical of each pixel is substantially equal to 2:3 (Abstract; Figs. 2, 3 + assoc. text).

7. Regarding claim 2, Roh further discloses storage capacitors formed by the overlap of the pixel electrodes and previous gate lines (Structure and Function of the Invention, 15th ¶).

8. Regarding claim 3, Roh further discloses storage capacitors formed via storage capacitor lines separated from the gate lines, formed of the same layer as the gate lines, and overlapping the pixel electrodes (Structure and Function of the Invention, 23rd ¶).

9. Regarding claim 5, Roh also discloses the data lines to have a triple-layered structure including an amorphous silicon layer (160), an ohmic contact layer (160), and a metallic layer (171) (Fig. 4; Structure and Function of the Invention, 19th ¶).

10. Regarding claim 7, Roh further discloses a data pad (179) connected to each data line (171) (Fig. 3).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over Roh in view of Rhee et al. (Rhee), US PGPub. No. 2003/0136971 A1.

14. Roh discloses a liquid crystal display wherein a ratio of horizontal to vertical of each pixel is equal to 2:3, as discussed under claim 1 above. Roh further discloses a protective layer (180) formed between the pixel electrodes and the gate lines and the data lines, said protective layer having a plurality of contact holes for electrically connecting the pixel electrodes to the drain (Fig. 4; Structure and Function of the Invention, 21st ¶).

15. Roh fails to expressly disclose the protective layer to be made of acryl-based organic insulating material or chemical vapor deposited insulating material having a dielectric constant equal to or less than 4.0.

16. However, Rhee discloses a passivation layer (i.e. protective layer) for a liquid crystal display TFT substrate, said passivation layer to be "preferably made of an acryl-based organic insulating material having an excellent planarization characteristic and a low dielectric constant or a low dielectric insulating material such as SiOC or SiOF

formed by a chemical vapor deposition and having a low dielectric constant equal to or lower than 4.0" (Rhee, ¶ [0056]).

17. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the protective layer of Roh in the manner of Rhee, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of design choice. *In re Leshin,* 125 USPQ 146.

18. **Claims 6, and 9-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Roh in view of Song, US Pat. No. 6,614,492 B1 (cited in previous Office Action).

19. Regarding claims 6 and 9, Roh teaches a thin film transistor array comprising pixel electrodes and a liquid crystal display comprising pixel electrodes as well as common electrodes, as discussed under claims 1 and 8 above.

20. Roh fails to teach or suggest each pixel electrode to have a first cutout, the common electrode to have a plurality of second cutouts, and each pixel to be partitioned into a plurality of domains by the first and the second cutouts.

21. However, Song expressly teaches the desirability of openings (i.e. cutouts) in electrodes that align the liquid crystals in different directions (i.e. in a plurality of domains) (Song, col. 1, lines 18-29; Fig. 1).

22. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include cutouts in the pixel and the common electrodes,

as taught by Song, in the liquid crystal display and TFT array panel of Roh, in order to achieve a high contrast and a wide viewing angle in the liquid crystal display device (Song, col. 1, lines 18-29).

23. Regarding claim 10, claim 9 is unpatentable over Roh in view of Song as discussed above.

24. Roh fails to teach the liquid crystal molecules to be aligned perpendicular to the first and second substrates in the absence of an electric field between the pixel and common electrodes, i.e. to be vertically aligned.

25. However, Song expressly teaches the desirability of vertically aligned liquid crystal molecules in conjunction with cutouts in the electrodes (Song, col. 1, lines 18-29; Fig. 1).

26. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use vertically aligned liquid crystals, as taught by Song, in the liquid crystal display of Roh, in order to achieve a high contrast and a wide viewing angle in the liquid crystal display device (Song, col. 1, lines 18-29).

27. Regarding claim 11, claim 9 is unpatentable over Roh in view of Song as discussed above. Roh further teaches a protective layer formed between the pixel electrodes and the gate lines and the data lines and having a plurality of contact holes (185) for electrically connecting the pixel electrodes (190) to the drain electrodes (175) (Roh, Fig. 4)

28. Roh fails to teach the drain electrodes overlapping second cutouts at least at the contact holes.

29. However, Song teaches a protective layer formed between the pixel electrodes and the gate lines and the data lines and having a plurality of contact holes, with the drain electrodes overlapping the cutouts of the common electrode at least at the contact holes (Song, Figs. 2, 3).

30. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the drain electrodes overlapping the second cutouts at least at the contact holes, as taught by Song, in the liquid crystal display as taught by Roh in view of Song, in order to achieve a high contrast and a wide viewing angle in the liquid crystal display device (Song, col. 1, lines 18-29).

16. **Claim 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over Roh.

17. Roh discloses a liquid crystal display wherein a ratio of horizontal to vertical of each pixel is equal to 2:3, as discussed under claim 1 above.

18. Roh further discloses red, blue and green pixels to be sequentially arranged in a row direction, the red and the green pixels alternately arranged in a column direction, the blue pixels repeatedly arranged in the column direction, and four red and green pixels surround adjacent two blue pixels in neighboring two pixel rows facing each other (Figs. 1, 2).

19. Roh fails to expressly disclose:

a. a second insulating substrate facing the first insulating substrate;

b. a black matrix formed on the second insulating substrate;

c. red, green and blue color filters formed on the black matrix and provided at the respective pixels;

d. a common electrode formed on the color filters; and

e. a liquid crystal layer sandwiched between the pixel electrode and the common electrode.

31. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to include a second insulating substrate, color filters, a black matrix, common electrodes formed on the color filters, and a liquid crystal layer as claimed, in the liquid crystal display of Roh, because it would have been well known in the art at the time of the invention to include those objects in a liquid crystal display device, in order to, for example, effect a functioning, high-contrast, color liquid crystal display.

Conclusion

32. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew P. Lawson whose telephone number is 571-272-9795. The examiner can normally be reached on Monday through Thursday from 8:00am to 6:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms, can be reached at 571-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Matthew P. Lawson,
Examiner

MPL

ANDREW SCHECHTER
PRIMARY EXAMINER